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ABSTRACT

Based on interviews with teachers, department chairs, principals, and staff developers, observations of hundreds of lessons, and a perusal of the social studies research literature and the broader school change literature, dominant barriers to the promotion of thinking were identified. Six barriers emerged: instruction as knowledge transmission, a curriculum of coverage, teacher perceptions of students, large number of students, lack of planning time, and a culture of teacher isolation. The way in which each barrier negatively impacts the promotion of students' higher order thinking is explained, combining analytic arguments with quantitative and qualitative research findings. It is argued that though there is no logical or necessary sequence of attack when confronting these barriers, due to their interactive nature, department-, school-, and system-wide efforts to improve students' higher-order thinking are more likely to experience success if all barriers are tackled. A 42-item list of references is included. (Author)

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Barriers to the Promotion of Higher-Order Thinking in Social Studies

Joseph J. Onosko

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ABSTRACT

Based on interviews with teachers, department chairs, principals, and staff developers, observations of hundreds of lessons, and a perusal of the social studies research literature and the broader, school change literature, dominant barriers to the promotion of thinking were identified. Six barriers emerged: instruction as knowledge transmission, a curriculum of coverage, teacher perceptions of students, large number of students, lack of planning time, and a culture of teacher isolation. The way in which each barrier negatively impacts the promotion of students' higher order thinking is explained, combining analytic arguments with quantitative and qualitative research findings. It is argued that though there is no logical or necessary sequence of attack when confronting these barriers, due to their interactive nature, department-, school- and system-wide efforts to improve students' higher-order thinking are more likely to experience success if all barriers are tackled.

I. Introduction

> There is no use in claiming to teach boys and girls how to study, and how to command their intellectual forces by the current practice of keeping them at the point of the bayonet in rehearsal of textbook facts... (Stevens, 1912, p.26)[1]

> The chief purpose of this analysis...was to get some evidence bearing on the growth of pupils in understanding. From this point of view the study was not successful for the simple reason that...the pupils did not talk enough to give any evidence of mental development. (Corey, 1940, p.745)[2]

> The dominate modes of instruction continue to be large group, teacher-controlled recitation and lecture, based primarily on textbook. (Shaver, Davis, & Helburn, 1979, p.151)

> Most discussion in classrooms, when it occurs, calls for simple recall...serious intellectual discussion is rare...how can the relatively passive and docile roles of students prepare them to participate as informed, active and questioning citizens? (Boyer, 1983, pp.146-147)

The paucity of serious intellectual challenge in America's schools as observed by the above researchers has been echoed by many others past and present. It seems that America's long and rich history of placing the development of students' higher order thinking as a fundamental educational goal (Cuban, 1984a; Mann, 1979) has remained only that, a goal. However, unlike many goals that remain suspended in the rarefied air of political rhetoric, the past decade has witnessed many sincere efforts in this area, both in theory (e.g., Glaser, 1984; McPeck, 1981; Newmann, 1990; Schrag, 1988; Siegel, 1988) and in practice (e.g., Alter & Salmon, 1987; Chance, 1986; Costa, 1985; Pressiesen, 1986; Walsh & Paul, 1987). Despite these efforts, there remains a conspicuous absence of cognitive challenge in most classrooms.

Recent research of typical or representative social studies departments indicated inconsistent and modest efforts at promoting students' thinking, while the study of exemplary departments

revealed superior programs but opportunity for significant improvement (Newmann, in press). In addition, Newmann, Onosko, & Stevenson (1990) found that among 25 prominent staff developers working to help improve teachers' instruction for thinking, only a few could document that their efforts actually modified teachers' classroom practices and all were quick to cite numerous barriers to their efforts.

Why is it so difficult to make classroom activities more intellectually challenging? What barriers foil teachers' efforts to promote students' thinking? The problem of barriers to thinking and ways to overcome them provided the basis for a 5-year study entitled, "Higher Order Thinking in the Social Studies" (Newmann, 1990b). In this paper I will outline the dominant school-related barriers that, according to our research, confront social studies departments as they attempt to institute greater emphasis on higher order thinking.[3]

II. Methodology

A variety of research data were analyzed. In-depth interviews were conducted with, and questionnaire responses were gathered from, 56 teachers from 16 social studies departments from around the country. Nearly 500 classroom observations of teachers' lessons were gathered by a 6-member research team. In addition, the principal and department chair from each of the 16 schools were interviewed.[4] Extensive interviews were also conducted and questionnaire responses obtained from 25 staff developers from around the country working to help improve teachers' instruction for thinking.[5]

Based upon observations from field research and discussions among members of the research team, a number of barriers to the promotion of thinking were tentatively identified. The research literature on social studies education and the broader, school change literature were also examined to identify barriers to thinking that may have been overlooked. The research team's empirically-grounded intuitions and perusal of the scholarly literature were then reexamined through a more systematic analysis of the research data. For example, it has been argued that extensive content coverage pressure is detrimental to the promotion of students' thinking (Newmann, 1988; Sizer, 1984). To check this claim, 56 teachers' views on content coverage were recorded and analyzed to determine if, indeed, coverage pressure was a prominent barrier to instruction for thinking.

While teachers' perceptions are central to understanding barriers to thinking, their intimate involvement in the school environment prevents one from using teachers' perceptions as the most valid indicators of critical barriers. As an example, one of the critical barriers that emerged from this research appears to be a school culture of teacher isolation. Only a few teachers, however, mentioned isolation as a barrier to thinking, in part because their immersion in the culture prevented them from seeing it or its negative effects. The identification of dominant barriers, therefore, involved not only the scrutiny of teachers' perceptions, but also the collective conclusions of the research team based on observations of diverse phenomena in the schools. A case is built for each barrier, combining analytic arguments with quantitative and qualitative research findings.

III. Conceptual Framework

Defining higher-order thinking is a frustrating task; Larry Cuban (1984b) referred to the literature on thinking as a "conceptual swamp." Nonetheless, it is possible to formulate a general conception of higher order thinking that is consistent with the literature and specific enough to guide an inquiry into barriers to thinking. Following Newmann (1990b), higher order thinking is defined as the interpretation, analysis, or manipulation of information when a question to be answered or a problem to be solved cannot be resolved through the routine application of previously learned knowledge.

In contrast, lower-order thinking occurs when the person already knows how to proceed; that is, the task or problem requires only the accessing, inserting, or listing of information or ideas already at hand or easily acquired. The key distinction is whether the person uses or applies information and ideas to solve a problem or task in a way that is novel to him/her. Because individuals differ in the kinds of problems they find challenging, higher-order thinking must be viewed as a relative rather than an absolute concept. To illustrate, subtracting 2 from 6 for the first time will prove extremely challenging to most first graders, whereas the solving of a quadratic equation is unlikely to challenge most mathematics professors. If higher-order thinking is, indeed, a relative concept, then tasks requiring higher order thinking can, in theory, be designed for any student in any domain regardless of his/her prior experience in that domain.

Why do some students succeed at higher order challenges while others fail? What resources does the successful thinker need? Though disagreement exists in the research literature regarding the relative importance of each resource, there is consensus that students need three resources to successfully complete higher order challenges: in-depth knowledge, cognitive skills, and dispositions of thoughtfulness.

In-depth knowledge. Thinking cannot take place in a content or information vacuum; it is always directed toward something. As McPeck (1981) stated: "thinking in the abstract, in isolation from specific fields or problem areas, is muddled nonsense; thinking of any kind is always 'thinking about X'" (p.13). It is therefore essential that the student-thinker possess in-depth understanding of information and ideas relevant to the cognitive challenge at hand. Research on cognitive development, expert and novice problem-solving, and information processing models of cognition make this abundantly clear (Glaser, 1984; Perkins & Salomon, 1989).

Cognitive skills. Cognitive skills refer to the strategies, techniques, and heuristics one uses when working to solve a challenging problem or task. Skills have been defined in terms that transcend specific subject matter, such as inferring from data, detecting bias, distinguishing fact from value, evaluating claims, identifying contradictions, and offering counterexamples. Skills can also be construed as domain-specific, for example, crossexamining witnesses in court cases, troubleshooting in auto repair, or solving proofs in geometry. Skills may be applied to problems in a variety of domains or to a variety of problems within a given domain.

Dispositions. Possession of knowledge and skills is not enough to solve higher order problems successfully. One also needs to be "disposed" to think. Dispositions of thoughtfulness include confidence in one's ability to think, curiosity, tolerance of ambiguity and uncertainty, an insistence that claims be supported by reasons, reflectiveness to avoid impulsive or quick responses (Dewey, 1933; Schrag, 1988), mental flexibility to view problems from a variety of perspectives (Schrag, 1988), and persistence (Dweck, 1986). Dispositions thus refer to attitudes and traits of character that insure the effective use of knowledge and skills.

To promote students' higher-order thinking, teachers need to construct classroom activities that (a) require the interpretation, analysis, or manipulation of information and ideas and (b) develop students' in-depth knowledge, cognitive skills, and dispositions of thoughtfulness. From this conceptualization of higher-order thinking, the research team constructed a set of observable dimensions or features one would expect to see in a classroom that is promoting students' thinking (Newmann, 1990b). The six most critical dimensions are identified below. This list is not definitive or exhaustive, but it is claimed that they are critical for the promotion of students' higher-order thinking in classrooms. Conceptualizing critical dimensions of thoughtful classroom interaction will help to identify barriers to the promotion of higher-order thinking. The term "barrier" is used here to refer to obstacles that prevent or inhibit the observance of higher-order thinking among students in classrooms.

1. There was sustained examination of a few topics rather than superficial coverage of many.

The development of students' thinking requires sustained inquiry of a topic to insure the acquisition of in-depth knowledge, skilled thinking about the topic, and the development of thoughtful dispositions. Due to the time demands of sustained inquiry, teacher in their lessons and courses need to address few rather than many topics. Also, superficial coverage of topics leads to superficial understanding, limited skill development, if any, and mindlessness.

2. The lesson displayed substantive coherence and continuity.

Lessons that contain factual and conceptual inaccuracies, gaps in logic and reasoning, inappropriate transitions, and so on are unlikely to facilitate students' in-depth understanding. Students need exposure to lessons which highlight the logical development of ideas, and exposure to the perspectives of experts in disciplines relevant to the topic or problem under study. Through coherent inquiry and structured learning students come to possess norms of rationality.

3. Students were given an appropriate amount of time to think, that is, to prepare responses to questions.

Dispositions of reflectiveness and flexibility of thought can be cultivated when students are given time to think. Fast-paced teacher questioning prevents students from accessing from memory knowledge relevant to the question, from making a variety of connections between information and ideas before responding, and from reflecting on alternative solutions. Research indicates that "wait time" results in longer, more complex and sophisticated student responses, and results in more student-initiated discourse

(Tobin, 1987).

4. The teacher asked challenging questions and/or structured challenging tasks (given the ability level and preparation of students).

By definition, in higher order thinking students face challenging problems or tasks; that is, students must anaylze, interpret, or manipulate information and ideas in ways that are novel or unique to their present level of understanding.

5. The teacher was a model of thoughtfulness.

To develop skilled thinking and thoughtful dispositions in their students, teachers need to model thoughtfulness themselves. This can be accomplished by providing encouragement when the dispositions (e.g., curiosity, persistence) are exhibited by students, by showing students how he/she thought through the problem, and by acknowledging to students the difficulty of some problems and the uncertainty that often remains after arriving at a "solution."

6. Students offered explanations and reasons for conclusions.

The validity of solutions or conclusions to problems depends, in large part, on the explanations and reasons that undergird them. Reasoning also illuminates the extent to which students have developed in-depth knowledge and skilled thinking about the topic under scrutiny.

Having defined thinking and central attributes of the thoughtful classroom, I turn now to the barriers that inhibit their occurrence in schools.

IV. Barriers

A. Teaching as Knowledge Transmission

Social studies teachers are expected primarily to address information, ideas, and issues in history, the social sciences, and civic affairs. In theory, this subject matter can be taught in ways that are intellectually challenging, and, indeed, exceptional teachers do just that (Onosko, 1990; Wineburg & Wilson, 1988). However, research consistently documents that content is transmitted to students in ways that fail to challenge students to think (Cuban, 1984b; Goodlad, 1984; Hare & Pullman, 1980; Shaver et al, 1979; Sirotnik, 1983).

Instead, the overriding agenda is to ensure student acquisition of knowledge, be it generalizations, themes, facts, chronological events, or beliefs held by prominent people past and present. The educational focus is on **products** of thought. The goal is to transmit these products to students and to ensure that they can then reproduce them. The drive to enculturate youth, to expose them to knowledge deemed important by society, is so pervasive that it tends to displace thinking from the school agenda. The inordinate emphasis on student acquisition of products of inquiry (rather than student participation in inquiry) is the first major barrier to the promotion of students' thinking.[6]

Carl Schorske of Princeton University poignantly identified the tension between knowledge transmission and thinking:

> Do you regard "learning" as a noun or a verb? If as a noun, as a thing to be possessed and passed along, then you present your truths, neatly packaged, to your students. But if you see "learning" as a verb!--the process is different. (Boyer, 1987, p.151)

In an environment of transmission, the assemblage of evidence and inferential thinking that undergirds the knowledge delivered is often ignored. Much like crossing a bridge, students see the road surface but not the pilings and support beams. Students are less likely to give reasons and explanations because the goal is to demonstrate comprehension of facts and concepts (i.e., products or "truths") not the reasoning that validates them. Questions and solutions are not presented as problematic, nor are students required to "interpret, analyze, or manipulate" information in ways that go beyond the teacher's or text's presentation of it. History lessons that emphasize chronology are particularly prone to lower-order cognitive demands as students face an endless series of "then this happened" recitations. Transmission orientations to teaching can be observed in the comments of two teachers from our research sample:

> I like to be in charge. I like to run the class. There probably would be more thinking if I talked less and let them think more. But many students like it when I talk, they say they understand it better that way.
>
> You know, we don't work to elicit the ideas and the strains of thought from students. We instead will say, "Well, I'm just going to tell them. I'll take a short cut." And that's a danger. It's an insidious thing that happens in teaching.

The perspective provided by the above teachers is shared by others. When asked if they found "exposing students to subject matter content (a) more, (b) less, or (c) equally interesting as developing students' thought and reasoning", 30% of our sample of high school social studies teachers (n=56) selected exposure to content as more interesting while only 4% selected the development of students' thought and reasoning as more interesting (66% of the sample said equally interesting).[7]

The desire to transmit knowledge on the part of teachers is deeply rooted. Teachers' collegiate experience is usually dominated by instructional formats that emphasize knowledge transmission through lecture (Boyer, 1987). This experience reinforces through modeling the same instruction in the next generation of teachers.

In addition, instruction as transmission persists because after years of hearing declarative statements in the classroom, future teachers come to hold less-than sophisticated conceptions of knowledge. Rather than perceiving knowledge claims as open to debate and revision, knowledge is often viewed as fixed, absolute, and certain. While "facts" exist and consensus can be found on certain interpretations of events in history and phenomenon in the social sciences, more typically there exists disagreement and debate. Knowledge is actually being constructed, challenged, and recast constantly. But a steady diet of narrative, authoritarian accounts of subject matter from both college instructor and college text can produce uncritical consumers of facts, events, ideas, generalizations, and theories, the origins of which remain unexamined and unchallenged. Alternative forms of instruction are necessary if the next generation of teachers is to appreciate and share with students an understanding of the interpretive nature of social science and historical inquiry (Boyer, 1987; Walsh & Paul, 1987). Sarason (1971) noted the authoritarian orientation in many teachers' instruction 20 years ago:

> Although unverbalized, the ground rules were not difficult to discern. First, the task of the student was to get the right answer and this was more important than how one arrived at the answer. By "more important" I mean simply that the right answer was what teacher and student obviously treasured.

> Second, for any one problem or question there was a correct way of thinking about and answering it. Third, **thinking was really not a complicated affair.**
> (Sarson, 1982, p.221)

Instruction by transmission and absolutist conceptions of knowledge are attacked by teachers aware of the constructive nature of knowledge. One exceptional teacher in our research discussed the negative effect authoritarian teachers have on the development of the good student-thinker:

> A good thinker isn't afraid if someone challenges a position. A good thinker is willing to take a look at someone else's hypothesis or theory even if it's 180 degrees apart from his own, rather than a dogmatic knower, someone who knows dogma. Most kids think they're suppose to be dogmatic because they think the teachers are. They're modeling themselves on teachers who they [students] think are dogmatic.

Another equally if not more important reason for the dominance of instruction by transmission involves class size and management problems associated with educating 25-40 students at once. The severity of this problem necessitates discussion of it below as a separate, dominant barrier.

B. Broad, Superficial Content Coverage

A second major barrier to thinking is the tendency to cover superficially a broad range of information and ideas with students. Social studies practitioners are expected to teach students to read, write, respect authority, to work hard, to be punctual, and to be good citizens. They are also required or pressured by interest groups to expose students to content related to United States history, world history, global education, geographic literacy, cultural literacy, state history, local history, macro and consumer economics, environmental issues, multicultural awareness, social psychology, and law-related education.

Note that the barrier of excessive content coverage need not be linked to the barrier of knowledge transmission just discussed. One can imagine a teacher who experiences very little coverage pressure but who nonetheless consistently transmits information and ideas to students. Be it a few or many content objectives, the teacher who views learning as the acquisition of "nouns" (thought-products) and teaching as the transmission of them is unlikely to challenge students' thinking. This point was not missed by one outstanding teacher of thinking from our research sample:

> you could survey all of American history in a boring, non-critical, non-thinking way or you could focus for the whole 18-week semester on the causes of WWII in a boring, non-thinking, non-critical way.

In practice, however, the coverage barrier is often observed in conjunction with the barrier of knowledge transmission. Why? When great value is placed upon the transmission and possession of knowledge, it is but a small step to also place great value on the quantity of knowledge possessed. Add to this the multidisciplinary, synoptic nature of social studies and the vast terrain of topics involved, and one finds teachers buried in a landslide of content. The drive to cover more and more content in turn reinforces instruction by transmission as it is the most expedient method to teach (though not necessarily learn) information and ideas. Therefore, one can say that the drive to transmit knowledge leads to a curriculum of coverage, and likewise, a curriculum of coverage necessitates knowledge transmission as the dominant form of instruction.

Why is extensive content coverage detrimental to the promotion of higher-order thinking? The attempt to implant vast amounts of

information in the minds of students leaves little time for students to explore information, to reflect upon it, to recast it, to draw connections, to ask questions about it--in short, to think about rather than mindlessly absorb information. The coverage press results in teacher questions that typically require only simple recall (you have it or you do not) and necessitates fast-paced question-and-answer sequences to get through the lesson material. The vast number and variety of facts and ideas to be covered makes it difficult to develop lessons that exhibit internal coherence, and coherence between lessons. Paraphrasing Newmann (1988), "there is little to probe or explore in a curriculum that is "a mile wide and a foot deep." In addition, teachers themselves have little time to share their own thinking with students, acknowledge the problematic nature of solutions to problems and explanations to events, or listen to and reward students' thinking.

Many teachers are well aware of the negative effect that coverage has on the promotion of students' thinking. When asked to identify the three most detrimental barriers to instruction for thinking, 39% of teachers included content coverage in their list of three barriers. Overall, the press of coverage was the fourth most frequently mentioned barrier identified by teachers (see Table 1).

TABLE 1

FREQUENCY WITH WHICH A GIVEN BARRIER WAS MENTIONED BY A TEACHER AS ONE OF THE THREE MOST DETRIMENTAL BARRIERS TO INSTRUCTION FOR THINKING
(n=56)

Barrier	Frequency (%)
Lack of planning time	48%
Students (little motivation, lack thinking skills, knowledge, or capacity)	45%
Large class size	41%
Extensive content coverage	39%
Large total student load	29%
Instructional materials that emphasize thinking	25%
Teachers' own lack of knowledge about teaching for thinking	14%
Short class length	11%
12 other barriers were mentioned that achieved frequencies of less than	10%

Why are many teachers compelled to frantically race their students across miles of information and ideas rather than thoughtfully walk their students across shorter stretches of content? Responses such as the following were provided by coverage oriented teachers in our sample:

> I'm more survey oriented. There's a conflict in my head but I go for coverage. The kids like it, I like it, exposure is important. If they know a little, they can go on to further understanding themselves or in college.

> I'd like to cover some things in more detail but I had too many classes that I went through where the teacher never covered the material they were supposed to...Most of my students are going on to college and I don't want them getting into a college situation where they've never heard of Plato. Now they may have forgotten when they get there what his ideas were, but at least they'll say, "Oh, a Greek philosopher" and know a little bit about him.

Newmann (1988) provided insight on this question when he pointed out that even though the purpose of "education is, in a sense, to cover material--that is, to expose students to and make them familiar with

new information", this fact has:

> fostered the illusion (firmly held by professional educators and by the general public) that it is possible to teach a reasonably comprehensive sample of all the worthwhile knowledge that is currently available. (p.346)

This belief or "illusion" is deeply entrenched in American culture. It will prove extremely difficult to modify, as possession of numerous, discrete, knowledge bits serves as the nucleus of the culture's conception of education itself. Familiarity with a wide range of information may be perceived by the society to be a serious and difficult intellectual enterprise, but cognitive scientists and many educators see superficial knowledge acquisition as nothing more than full-throttle memorization.

Teachers' extensive exposure to superficial, breadth-oriented coursework in their own post-secondary education leads not only to a transmission pedagogy, as was discussed in the preceding section, but reinforces a coverage "ethic" in their own teaching. This exposure also prevents many teachers from pursuing topics in-depth when they so desire. A number of teachers from our research sample expressed concern that though they might prefer in-depth inquiry, they would not know how to fill classroom time if coverage pressure were removed. These teachers simply did not believe they knew enough about topics or the inquiry process to sustain discussion for more than a lesson.

According to teachers, other sources of coverage pressure come from state and national assessment instruments, state and district curriculum guidelines, and traditional textbooks. Sample data indicate that many teachers (43%) find district and state testing to be "fairly" or "extremely" detrimental to their efforts to promote

students' thinking. Thirty-nine percent of teachers reported that coverage pressure from textbooks and other instructional materials had a fairly or extremely negative effect on their efforts to promote students' thinking. Only 15% indicated that state and district curriculum guidelines negatively affected their efforts.[8]

Although the coverage drive, or "disease" as Newmann (1988) has labeled it, may be due, in part, to guidelines, textbooks, and tests, interviews with teachers from the research sample indicated that coverage pressure was often self-imposed (Onosko, 1989).[9] Most teachers did not directly experience accountability demands from tests and curriculum guidelines, nor were they required to use only the textbook. Instead, they were given wide discretion to determine what would be taught, how, and when. It seems that guidelines, textbooks, and tests were used by some teachers as an excuse to account for their breadth-oriented ways.

Interestingly, teachers most effective in promoting students' thinking expressed greater displeasure with external sources of coverage pressure (i.e., curriculum guidelines, state tests, the department chair, colleagues), were less willing to acquiesce to external coverage pressure when it did exist (Onosko, 1989), and were less likely to use textbooks in their classroom instruction than were their colleagues who were least effective in promoting student thinking (Onosko, 1988).[10] This seemed to be due to exemplary teachers' more sophisticated conceptions of thinking and more impassioned desire to promote students' thinking. They knew that content had to be reduced if students were to engage in serious inquiry. Lacking this internal guidance, less effective teachers of

thinking relied upon curriculum guidelines and textbooks.

C. Teachers' Low Expectations of Students

The third major barrier is teachers' low expectations of students. These negative perceptions on the part of some teachers assume a variety of forms, though the effect on classroom thoughtfulness is essentially the same. Low expectations of students leads to instruction in which acquisition of knowledge is emphasized because students are perceived to be incapable of negotiating or unwilling to attempt higher-order challenges. Almost one-half of the teachers (45%) cited students as one of the three most detrimental barriers to thinking, second only to "lack of planning time" (48%). (See Table 1). Classroom observations in this study suggest that due to the predominantly factual nature of the information taught by some teachers, students were given few opportunities to do higher-order thinking and teachers rarely modeled higher-order thinking.

What is the basis for teachers' low expectations of students? Some teachers assumed that students lack the inherent mental **capacity** to engage in higher-order thinking, especially students labeled low achievers or low ability. In his review of the research literature on adolescent thinking, Keating (1988) found no support for the argument that students lack the cognitive capacity to successfully engage in higher-order thinking. Because higher order thinking is a relative rather than an absolute concept, all students regardless of cognitive capacity can, in theory, be given a problem or task that involves them in higher-order thinking.

For some teachers the "problem" is not to be found in students'

inherent mental capacity, but rather in students' underdeveloped cognitive skill due to deficiencies in students' prior educational experiences. If students are perceived to lack thinking skills the teacher is less likely to craft lessons that require higher-order thinking. Teachers who avoid instruction for thinking and hold this perception of students are tacitly or overtly admitting that they are unable to help students reduce this skill deficit.

Some teachers cited deficits in students' knowledge as the reason they could not emphasize thinking in their classroom. This perception often led to extensive and at times tedious presentation of "the facts" before the low achievers were allowed to think about the material. One teacher stated it this way:

> I'm dealing with Level 2 students...You've got to build up information first, and that takes such a long period of time.

One of the finest teachers of thinking in our sample expressed disgust at this approach:

> Low level kids spend years on recall because "they still don't know enough"--BS!...All learning and thinking should begin with high level questions...When students are actively pursuing whole, meaningful tasks, they will naturally use all the skills in Bloom's taxonomy....

Some teachers expressed frustration with students' low motivation levels if not outright resistance to thinking tasks. Over one-half of those in the sample (56%) claimed that student resistance had a fairly or extremely negative influence on the teachers' ability to promote students' thinking. As one teacher explained:

> Students have changed over the years. They are just not willing to put much effort into school. Their attention span is short and they are apathetic. If they were taught to think in the elementary grades there is no transfer to high school.

Shaver et al, (1979) correctly noted that "teachers generally do not make the possible connection between the lack of motivation on their students' part and their own reliance on textbook/content based, teacher dominated instruction." (p.152)

Teachers' low student expectations is also a consequence of content coverage. In a coverage curriculum, students are rarely afforded opportunities to display thoughtful orientations to subject matter, and that can lead to a deteriorating cycle: Students become frustrated and bored with the memorization of content; student performance falters and the teacher assumes deficient student mental capacity, skill, background knowledge, or effort to engage in thinking; having concluded that students cannot or will not think, greater emphasis is given to tasks requiring only lower order thinking; the combination of coverage and lower order thinking tasks further disengages students academically; and so on.

Rather than give up on students with less than stellar records of performance, outstanding teachers of thinking accept the challenge. Armed with patience, confidence and faith in their charges, these teachers support, encourage and prod students to discover their intellect. One outstanding teacher in the research sample explained that she does not accept "I don't know" responses from students:

> I let them know at the beginning of the year that an "I don't know" answer is completely unacceptable, that I will not go away until they get it right...after a few successes they want to be called on.

Another teacher emphasized the importance of viewing thinking as a relative concept; that is, students can be challenged to think regardless of ability or prior knowledge:

> Every student can be challenged to think more about an issue--no matter the complexity of the task. Even having young children discuss fairy tales can involve the same sophisticated thought processes as seniors analyzing research documents. The level of performance may be different but the same processes are going on.

D. Large Numbers of Students

Large numbers of students per class (class size) and large numbers of students overall (total student load) inhibit the promotion of thinking. Large class size engenders real and imagined classroom management fears on the part of teachers, especially when leading whole group discussions. Students often display frustration when having to wait their turn to speak. Teachers are afraid to Socraticly probe individual students' ideas for fear of "losing the rest of the class." Lengthy, single responses by students can also lead their classmates to "tune-out" and exhibit off-task behavior. Teachers also curb time for reflection out of fear that "brushfires" of off-task behavior will ignite during these moments of silence. It is not surprising that 73% of teachers identified large class size as either fairly or extremely detrimental to the promotion of thinking. When teachers were asked to identify the three most critical barriers to instruction for thinking, class size was the third most frequently cited barrier (41%).

The difficult task of monitoring numerous small group discussions in classes of 25-35 students or more triggers similar management concerns. Large numbers of students can reduce the quality of and frequency with which some teachers are willing to hold discussions, whether teacher-directed large group or student-centered small group. Large class size thus helps to reinforce

knowledge transmission forms of instruction, as the teacher can more readily control the classroom environment by disseminating information to students. One teacher in the sample communicated these concerns:

> When class size goes over a certain amount, you lose the ability to promote thinking. You feel frustrated. The demand is there to be more authoritarian...Smaller classes, even with students of diverse ability, allows teachers to use different techniques and methods. Control is less of an issue.

Smaller class size is especially important for teachers who want thoughtful classrooms because tasks that involve students in higher-order thinking can create unique management problems. Research indicates that management concerns increase as the cognitive demands placed on students increase (Doyle, 1983). Higher-order thinking tasks place students at greater risk of failure and at higher levels of frustration because these tasks require students to construct solutions rather than routinely or algorithmically apply information. The likelihood of off-task, disruptive behavior increases, as does the likelihood that students will attempt to reduce the difficulty of the task through negotiation with the teacher (McNeil, 1983). As one teacher from the research sample explained:

> Most students like to be in a "comfort zone" that requires few risks and assignments that are not difficult. I suspect students always have. Thinking about concepts, alteratives, situations, etc. provides too many opportunities involving risk. They are less comfortable when they don't know what I am going to ask, and when I ask them to defend what they say, or find fault with something I say. You lose the opportunity to blend in with the crowd. What if I'm wrong, what if everybody laughs at me, what if they think my ideas are weird? It's a tremendous risk.

Student resistance to tasks involving higher-order thinking can be checked if teachers assume the role of a coach, providing

encouragement, support, and constructive feedback to individual students to insure continued and confident effort. Relatedly, the construction of an intimate, nurturing environment in which students feel safe to share their ideas and beliefs also reduces the likelihood of resistance. Creating a safe learning environment and acting as a coach are more difficult to accomplish when working with large numbers of students.

The classroom practices of outstanding teachers in our sample make clear, however, that with great effort higher-order thinking can take place with large numbers of students (Onosko, 1990). By establishing certain behavioral expectations, constructing a nurturing learning environment, carefully planning the degree and type of cognitive challenge, and employing a variety of questioning techniques and motivational strategies, outstanding teachers of thinking are able to jump-start the mental engines of large numbers of students.

Large total student load can also negatively affect the quality and frequency of teachers' efforts to promote students' thinking, especially in the area of written discourse. Students' most extended and often best expressions of thought emerge through writing. Teachers need time to respond to this thought. If a teacher with a total student load of 125 was to assign a two-page essay every week, and only 15 minutes were allocated for reading and reacting to each essay, the teacher would be faced with over 31 additional hours of uninterrupted, exhausting work per week. This may explain why 66% of teachers identified total student load as a fairly or extremely detrimental barrier to thinking, and why total

load was the fifth most frequently mentioned barrier overall (see Table 1). This may also explain why written work, other than class notes and worksheet responses, was rarely observed across the entire sample of teachers' lessons (Newmann, 1990c). One teacher from the research sample expressed frustration with student load this way:

> I have 186 students. How can you teach that many? I'm tired at the end of the day. It takes forever to grade papers and I'm not willing to go home and spend 4 hours a night grading papers. I'm here at 7:45 until 4:45. I do have a wife and other things to do. You wind up giving a lot of objective tests and you can't give immediate feedback.

The problems identified here with respect to class size and student load underscore the need to inform policy makers and community members of the importance of reducing these numbers if more teachers are to develop good student-thinkers. While outstanding teachers of thinking are able to overcome problems associated with large class size, without a reduction in total student load it is unlikely that even the best teachers will devise ways to consistently react to students' written expressions of higher-order thinking.

E. Lack of Teacher Planning Time

In addition to the barrier of too many students, there is another organizational barrier to instruction for higher-order thinking: the minimal planning time alotted teachers. In traditionally organized schools, one, 45-minute time block is typically allocated for teacher planning. In that single period teachers of thinking face an awesome task. Due to the inadequacies of textbooks, teachers must venture to the library to find, read,

and then modify and photocopy reading materials for upcoming lessons. They must also review or acquire initial understanding of the ideas and issues to be discussed in each course (usually 2 to 3 different course preparations each day), and then apply their pedogogical knowledge to the content of each course to craft lessons that promote higher-order thinking. At the same time, they must begin to map out the direction of upcoming units. Obviously, very little of the above is accomplished during this brief time block.

Under these time constraints many teachers must settle for the textbook's presentation of the material. The text rarely offers the same degree of challenge as supplemental sources, sources which often contain competing perspectives and more sustained arguments. In addition, the limited time for teachers to familiarize themselves with topics negatively affects their ability and desire to lead discussions, and to offer students tasks that challenge their thinking. Lack of planning time seems to drive many teachers to the safety of instruction by transmission, a place where simplistic understanding is emphasized and the teachers' underdeveloped content understanding is more easily masked. The low-level cognitive demands characteristic of these classroom sessions offers students fewer opportunities to develop and share their thinking and reasoning.

Not surprisingly, lack of planning time was most frequently identified by teachers (48%) as one of the worst barriers to their efforts to promote students' thinking (see Table 1). On another questionnaire item that explicitly targeted the barrier of planning time, 73% of teachers in the research sample identified lack of

planning time as either "fairly" or "extremely detrimental" to the promotion of students' thinking. The following thoughts on planning time were offered by two teachers from the study:

> I believe that if I had the time...I could develop some ideas that would make my teaching for thinking much more effective. I think there are suitable materials available--you just need the time to locate them and adapt them to your needs.
>
> Sometimes I feel like a composer who cannot put the notes on paper quick enough. Often I am too tired to put them down on paper. Mostly I am frustrated by time and the demands placed on me...time needs to be set aside for reevaluating goals, objectives, and options for world history....We need one more preparation period per day so I can work with other teachers.

Additional empirical support emerges from a study of 25 staff developers working to help teachers improve their instruction for thinking. More staff developers (68%) identified insufficient planning time as a barrier to improved practice in the area of thinking than any other barrier (Newmann, Onosko & Stevenson, 1990). Limited planning time not only affected the planning efforts of teachers individually, but made very difficult the exchange of ideas and practices between colleagues. The fact that department members often did not share the same planning period during the day further undermined opportunities for collaborative unit and lesson planning, and eliminated chances for peer observation. As a result, to work collaboratively teachers had to meet before or after school, and the school administration had to be willing to provide substitute teachers or devise some other support system to enable teachers to leave their classes to observe the instruction of colleagues.

Without additional planning time, it is hard to imagine that most teachers can sustain the necessary time commitment outside of school to consistently challenge students' thinking. While it is

certainly the case that the level of thoughtfulness can be significantly improved in most teachers' classes without allocating more planning time, with almost equal assurance it can be stated that without more planning time effective teachers of thinking will remain the exception rather than the rule.

F. A Culture of Teacher Isolation

The last major barrier is the culture of isolation common to many departments and schools. Teachers spend their day with students, not fellow teachers. Teachers operate in isolation from one another, much like separate galaxies in a vast universe of instruction. This isolation severely limits their access to the curricular and instructional ideas of colleagues, and shields them from both constructive criticism of and recognition for their instructional practice. Opportunities are not available to discuss with colleagues broad department goals, course goals, general instructional techniques related to thinking, and specific ideas and issues regarding subject matter and strategies to address this content with students. All too often outstanding teaching techniques and superb lesson and unit ideas, while only a classroom wall or partition away, are not shared among colleagues. Such a culture does not encourage or promote collective action even though teachers frequently face very similar instructional concerns. Some members are able to develop into outstanding teachers in this environment but most cannot. Comments from two teachers in the research sample provide poignant examples of teacher isolation in school culture:

> I learned much from my colleagues by accident when, because of the district K-12 planning exercise I had to get our department members to write out their central objectives. When I read all this I was really proud. Here we've been teaching for 20 years and have never really shared these main ideas behind our teaching. We've taught in the same building, but really don't know what one another is doing.
>
> There are two people I look to for sharing ideas...Many other teachers in the department probably support higher order thinking, but because there is so little sharing, I never get the benefit of it.

Forty-eight percent of our sample of teachers spent less than one hour per week with colleagues discussing educational concerns of any kind. The sharing of an instructional technique occurred less than once every two weeks for 43% of the teachers, and an even greater number (52%) shared curriculum materials less than once over this same time span.

Immersion in a culture of isolation can lead some teachers to withhold from colleagues their "hard earned" instructional ideas. Isolation breeds an atmosphere of individualism, noncommunication, and at times competition. One department chair referred to teacher behavior of this kind as "the lone ranger syndrome." A culture of isolation also contributes to the development of indiscriminate, egalitarian attitudes toward instruction. The norm is that teachers are to respect, at least publicly, the practices of their colleagues regardless of their colleagues' classroom effectiveness. The implicit rule is, "you don't bother me, I won't bother you." Department-wide efforts to improve methods of instruction for higher-order thinking are unlikely to occur when norms such as these are accepted and operating.

Exemplary departments in our study, due in large part to principal and departmental leadership (King, 1990), have with some success attacked this problem and have created a culture of communication rather than isolation. Teachers moved from the safety of isolation, to the relative safety of discussing broad departmental goals and assumptions, to discussing unit and lesson content, to sharing (and debating) instructional strategies, to, finally, observing and discussing actual lessons through peer review. This communication, involving increasing levels of collaboration, scrutiny, and personal risk, provided opportunities for teachers to receive recognition for and confirmation of their teaching. It provided opportunities for teachers to see alternative approaches to instruction and to debate which instructional format or sequence of activities would most effectively engage and challenge students' thinking. A collective vision, identity, and knowledge base emerged, all focused around the goal of promoting students' thinking.

V. CONCLUSION

Though presented as separate and identifiable, it should be apparent that the above barriers are connected and that their net effect is far more detrimental to the promotion of thinking than the "sum of their parts." Large total student load and large class size limit opportunities for thoughtful interaction between teachers and students, which, in turn, contributes to low student expectations on the part of teachers. Instruction by transmission tends to foster a curriculum of coverage, and in reciprocal fashion, the demands of content coverage necessitate instruction by lecture (transmission)

to ensure that everything gets covered. Little planning time for teachers to exchange ideas with colleagues helps to ensure the continuation of a culture of isolation and traditional methods of instruction. Many additional linkages between the barriers could be identified.

Due to this linkage, reformers interested in placing greater emphasis on the promotion of students' thinking need to consider all of the barriers in a comprehensive plan of action. Barriers that are ignored can significantly reduce the effectiveness of the effort. For example, through a reform effort teachers may come to develop elaborate conceptions of thinking and hold high expectations for students. Yet the effect on classroom practice with respect to thinking will be modest at best if teachers continue to cherish content coverage or are given minimal planning time to change curricular and instructional practices. Likewise, breaking down teacher isolation and reducing student load will have limited impact on instruction for higher-order thinking if teachers maintain low expectations of students or continue to regard teaching as the transmission of information and ideas.

This analysis suggests that there is no logical or necessary sequence of attack when confronting these barriers. The staff of some departments or schools may want to begin their change effort by conceptualizing thinking, others may want to address the issue of content coverage or teachers' low expectations of students. Whatever the barriers initially targeted, reformers should consider the remaining barriers. Due to the interactive nature of the barriers, department-, school- and system-wide efforts to improve students' higher-order thinking are more likely to experience

success if all barriers are tackled. In this way, a greater number of teachers will assume the ranks of the exemplary and a greater percentage of students will be given opportunities to discover their intellectual potential. Inevitably, there will be "backsliding" and the need to return to barriers already addressed. The struggle to ensure that students are challenged to think will be a never ending process.

REFERENCES

Alter, J., & Salmon, J. (1987). **Assessing higher order thinking skills.** Northwest Regional Educational Labratory.

Boyer, E. (1983). **High school: A report on secondary education in America.** New York: Harper & Row.

Boyer, E. (1987). **College: The undergraduate experience.** New York: Harper & Row.

Chance, P. (1986). **Thinking in the classroom: A survey of programs.** New York: Teachers College Press.

Corey, S. (1940). The teachers out-talk the pupils. **The School Review, 48**, pp.745.

Costa, Arthur L. (1985). **Developing minds: A resource book for teaching thinking.** Alexandria, VA: A.S.C.D.

Cuban, L. (1984a). **How teachers taught: Constancy and change in American classrooms; 1890-1980.** New York: Longman.

Cuban, L. (1984b). Policy and research dilemmas in the teaching of reasoning: Unplanned designs. **Review of Educational Research, 54** (4), 655-681.

Dewey, J. (1933). **How we think.** Boston: D.C. Heath.

Doyle, W., Sandford, J., Clements, B., Schmidt-French, B., and Emmer, E. (1983). **Managing academic tasks: An interim report of the junior school study** (R & D Report 6186). Austin: Univ. of Texas, Research and Development Center for Teacher Education.

Dweck, C. (1986). Motivational processes affecting learning. **American Psychologist, 41** (10), 1040-1048.

Glaser, R. (1984). Education and thinking: The role of knowledge. **American Psychologist, 18** (3), 93-105.

Goodlad, J. (1984). **A place called school: Prospects for the future.** New York: McGraw-Hill.

Hare, V., & Pullman, C. (1980). Teacher questioning: A verification and an extension. **Journal of Reading Behavior, 12**, 69-72.

Hoetker, J., & Ahlbrand, W. (1969). The persistence of recitation. **American Educational Research Journal, 6** (2).

Keating, D. (1988).**Adolescents' ability to engage in critical thinking.** Madison, WI: National Center on Effective Secondary Schools.

King, B. (in preparation). **Leadership efforts to promote higher order thinking in social studies.** Madison, WI: National Center on Effective Secondary Schools.

Mann, L. (1979). **On the trail of process: A historical perspective on cognitive processes and their training.** New York: Grune & Stratton.

McNeil, L. (1983). Defensive teaching and classroom control. In M. Apple & L. Weis (Eds.), **Ideology and practice in schools** (pp. 114-142). Philadelphia: Temple University Press.

McPeck, J. (1981). **Critical thinking and education.** New York: St. Martin's Press.

Newmann F. (1988). Can depth replace coverage in the high school curriculum? **Phi Delta Kappan, 68** (5), 345-348.

Newmann, F. (1990a). Higher order thinking in the teaching of social studies: Connections between theory and practice. In D. Perkins, J. Segal, & J. Voss (Eds.), **Informal reasoning and education**, Hillsdale, NJ: Lawrence Erlbaum.

Newmann, F. (1990b). Higher order thinking in social studies: A rationale for the assessment of classroom thoughtfulness. **Journal of Curriculum Studies, 22** (1), 41-56.

Newmann, F. (1990c). Qualities of thoughtful social studies classes: An empirical profile. **Journal of Curriculum Studies, 22** (3), 253-275.

Newmann, (in press). The prospects for classroom thoughtfulness in high school social studies. In C. Collins (Ed.), **Building the quality of thinking in and out of our schools in the twenty-first century.** Hillsdale, NJ: Lawrence Erlbaum.

Newmann, F., Onosko, J., & Stevenson, R. (1990). Staff development for higher order thinking: A synthesis of practical wisdom. **Journal of Staff Development, 11** (3), 48-55.

Onosko, J. Promoting students' thinking through thoughtful classroom discourse: An analysis of teachers' thoughts and practices. (Doctoral dissertation, UW-Madison, 1988).

Onosko, J. (1989). Comparing teachers' thinking about promoting students thinking. **Theory and Reseach in Social Education, 17** (3), 174-195.

Onosko, J. (1990). Comparing teachers' instruction to promote students' thinking. **Journal of Curriculum Studies, 22,** (5), 443-461.

Perkins, D. & Salomon, G. (1989). Are cognitive skills context-bound? **Educational Researcher, 18,** (1), 16-25.

Pressiesen, B. (1986). **Critical thinking and thinking skills: State of the art definitions and practice in public schools.** Philadelphia, PA: Research for Better Schools.

Sarason, S. (1982). **The culture of the school and the problem of change.** Boston: Allyn & Bacon.

Schrag, F. (1988). **Thinking in school and society.** New York: Rutledge.

Shaver, J., Davis, O., & Helburn, S. The status of social studies education: Impressions from three NSF studies. **Social Education, 43** (February 1979): 150-153.

Siegel, H. (1988). **Educating reason.** New York: Rutledge & Kegan Paul.

Sirotnik, K. (1983). What you see is what you get--Constancy, persistency, and mediocrity in classrooms. **Harvard Educational Review, 53** (1).

Sizer, T. (1984). **Horaces' compromise: The dilemma of the American high school.** Boston: Houghton Mifflin.

Stevens, R. (1912). **The question as a measure of efficiency in instruction: A critical study of classroom practice.** NY: Teachers College, Columbia University, Contributions to Education No.48, p.95.

Tobin, K. (1987). Forces which shape the implemented curriculum in high school science and mathematics. **Teaching and Teacher Education, 3** (4), 287-298.

Tyson-Berstein, H. (1988). **A conspiracy of good intentions: America's textbook fiasco.** Washington, D.C.: Council for Basic Education.

Walsh D., & Paul, R. (1987). **The goal of critical thinking: From educational ideal to educational reality.** Washington, D.C.: American Federation of Teachers.

Wineburg, S. & Wilson, S. (1988). Models of wisdom in the teaching of history. **Phi Delta Kappan, 70,** (1), 50-58.

NOTES

1. As quoted in Hoetker & Ahlbrand (1969), p.153.

2. As quoted in Hoetker & Ahlbrand (1969), p.159.

3. Broader, societal barriers that negatively effect student motivation and achievement such as various forms of family dislocation, anti-intellectualism in mainstream culture, and poverty and unemployment, to name a few, will not be addressed in this paper. Clearly, these barriers need to be addressed as well if we are to maximize the thinking potential of youth.

4. Details of the methodology used in the study can be found in Newmann (in press).

5. Details of the methodology used in the study can be found in Newmann et al, (1990).

6. The distinction suggested here between student exposure to products of thought versus student production of thought is not intended to minimize the importance of content, nor should the distinction be viewed as a variant of the enduring but misguided "content vs process" debate. As stated previously, higher-order thinking requires **both** in-depth knowledge and cognitive skills (and dispositions related to thoughtfulness). In addition, exposing students to products of thought and other forms of direct instruction is not anathema to the thoughtful classroom. At times it may be necessary for teachers to provide information and explain ideas to students before students can solve a problem or take a position on an issue.

7. Due to missing data the actual number of respondents was 48.

8. The work of Tyson-Bernstein (1988) indicates that fragmented, fact-filled textbooks common to today's publishing market result from publishers' efforts to comply with the balkanized guidelines devised by most state and district curriculum committees. This suggests that even though teachers are more likely to cite textbooks as a source of coverage pressure, curriculum guidelines may underlie the textbook problem. I thank Jere Brophy for calling the research of Tyson-Berstein to my attention.

9. Based upon our research in one New York school, the state's Regent Exam places substantial coverage pressure on teachers' instructional efforts. At this particular school, teachers were held accountable for student success and failure even though students' prior social studies experience strongly influenced test results. Due to this accountability, laborious cram sessions replaced normal instruction for approximately two months prior to the exam.

10 These findings were based on a 10 teacher subset of the overall sample. Work is presently underway to test these findings on the overall sample.